

# Sanitarian Manpower

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THE SANITARIAN is a strategic member of the public health team. Because of his contributions to the nation's health and welfare, his identity and functions need to be crystal clear. In a larger context, the continuing critical manpower shortage in the health-oriented occupations makes it mandatory to husband the available human resource. Therefore, it is important that all groups in the health field know who they are, what they do, how and why their objectives change and their functions expand, and what new and different competencies are required of them to provide maximum effective service to their fellowmen in a rapidly changing environment.

In viewing kaleidoscopically the history of medical advances and public health developments in the United States during the past 100 years, the sanitarian has proved an invaluable assistant to the basic professional specialists in these areas. In early days it was the physician who functioned as a sanitarian responsible for the health and welfare of a community. As the importance of environmental health was recognized, the sanitarian was charged with water, sewage, milk and food control, and other aspects of the physical environment that are involved in combating communicable, infectious

diseases. Changes in the pattern of health and disease and the rise to prominence of new environmental health problems have brought into sharp focus the increased challenge to sanitary science.

In the face of this growing specialization, sanitarians have felt the repeated need to reassess their role and clarify their status. The pioneering works of persons such as Mangold, Bliss, and Dwork are well known. In recent years the State of Pennsylvania has made at least three surveys of its sanitarians (1-3). The California Association of Sanitarians examined the experience and educational background of sanitarians in that State (4).

The need for a major survey was expressed 5 years ago by Mangold: "Because of the rapid growth of the responsibilities of the sanitarian, a new appraisal is vitally needed. This study would enhance the prestige of the sanitarian and should tell a complete story, whereas in the intervening years, we have only studied parts of his activities. This type of factual study would be of direct benefit in drafting or readjusting curriculums in sanitary science, in describing and assembling examination items for this position by civil service commissions, in giving more complete information to State legislatures, boards of supervisors, and city councils. We must not depend upon our sporadic efforts or those of other public health workers to inform the public of our responsibilities in maintaining a sanitary and healthy environment" (5).

Recognizing the need for as comprehensive a picture as possible, the Public Health Service in 1962 conducted the first truly national manpower survey of the professional characteristics of thousands of persons who claimed to be sanitarians.

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In comprehensive terms, the objectives of the survey were to help point toward a more accurate definition of sanitarian with implications for educational institutions to plan more or different academic training of sanitarians, supply data which would be helpful to State legislative bodies in establishing or changing registration standards, and provide information on salary and other items which would be helpful to the occupation's leadership in strengthening the sanitarian's role and position among the health-related groups.

No single definition is acceptable to all interested parties. The American Public Health Association issued a definition in 1956 which is worth noting: "A public health sanitarian is a person whose education and experience in the biological and sanitary sciences qualifies him to engage in the promotion and protection of the public health. He applies technical knowledge to solve problems of a sanitary nature and develops methods and carries out procedures for the control of those factors of man's environment which affect his health, safety, and well-being" (6). An APHA subcommittee has met to consider the qualifications of public health sanitarians and may wish to revise this definition. The Public Health Service has its own description of sanitarian eligibility for employment.

The national professional sanitarian societies also have their own definitions, and there must be many more. All have been attacked as either too comprehensive or too limiting. Perhaps the functions, duties, and responsibilities of sanitarians today are such as to make them a group more easily described than defined. At the same time, it should be a matter of concern to the occupation that two of five survey respondents who reported themselves as engaged in sanitarian-type work did not have the title of sanitarian. A good case can be made for uniformity of title and identification in terms of professional visibility, public image, State certification and registration, salary equity, standards of training, and levels of competence.

With the initial assistance of the three national professional sanitarian associations that provided their membership rosters, a master mailing list of some 16,000 names was constructed. Questionnaires were mailed to this

entire file in May and June of 1962, with a followup later that summer. A third request was made by postcard. As a result of unavoidable duplications, deaths, incorrect addresses, and failure to reply, a final roster of some 10,700 people professing to be sanitarians has been compiled. Of these, 7,263 persons employed full time returned completed questionnaires. All the published data on professional characteristics of sanitarians are based on these 7,263 returns. However, there may be considerably more than 14,000 sanitarians currently employed in the United States.

The roster indicates a national ratio of 5.7 sanitarians per 100,000 population in mid-1962, or 1 per 18,000 persons. This may be compared with a widely used figure of 1 sanitarian or sanitary engineer for every 15,000 persons as a basic and minimum public health service requirement (7). This standard was established in 1950 and should be reviewed in the light of current public health practice. Milk, food, and meat technology as well as water, refuse, wastes, and vectors have probably been recognized in this ratio as areas of work experience of sanitarians. It is doubtful that allowance has been made for the sanitarians' role in such fields as air pollution, radiological health, and occupational health. Housing and institutional sanitation also may or may not be a part of the local public health program. Hence, the ratio of sanitarians to population has to be evaluated in terms of the responsibilities assigned to the profession.

The West has relatively more sanitarians in relation to population than any of the other three regions. The 13 western States have a total of 2,400 sanitarians, or 7.8 per 100,000 population. The South has more sanitarians (3,700) but a lower ratio (6.4). The North Central region with a ratio of 4.9 and the Northeast region with a ratio of 4.4 are considerably below the South and West.

California has the largest number (1,135) of sanitarians listed in the roster, nearly double the number in New York State. Ten States account for half of the total.

High ratios of sanitarians to population prevail in many of the western States. Hawaii is at the top, with 15.4 sanitarians per 100,000 population, followed by Wyoming, Alaska,

Oregon, Utah, and Colorado. Although California leads in actual numbers of sanitarians, its ratio of 6.7 is lower than that of 20 other States.

### Major Survey Findings

Major findings of the survey are grouped into the following categories: for whom sanitarians work, what they do, their areas of competence and specialization, their salary, their education and training, and their general characteristics.

*Employers.* State and county governments are the major employers, accounting for 61 percent of the respondents. City governments account for a further 17 percent. The Federal Government's 6 percent is divided among civilian employees, those in military service, and the Public Health Service commissioned corps.

The nongovernment segment of 16 percent is divided among business including self-employment, education, nonprofit organizations, and other types of employment. If information were available for the total manpower supply, the proportion employed outside government might exceed the 16 percent tabulated (fig. 1).

In order to learn something about position

descriptions of persons who regard themselves as sanitarians, each person was requested to supply his official payroll title. Three of five claimed the title of sanitarian. One of five claimed the title of inspector, officer, or aide. The remaining one of five wrote in his title which took many forms. Some used occupational classifications such as bacteriologist, chemist, and industrial hygienist. Some gave indication of grade such as director, chief, associate, or assistant, usually followed by the name of the unit supervised.

*Activities.* Half the respondents report their primary work activity is inspection, testing, or quality control. Almost another fourth are in the management-administration category. Of the remaining respondents, 5 percent are in research-teaching-writing, 5 percent in consulting, and 17 percent have general duties or are in production, sales, or marketing.

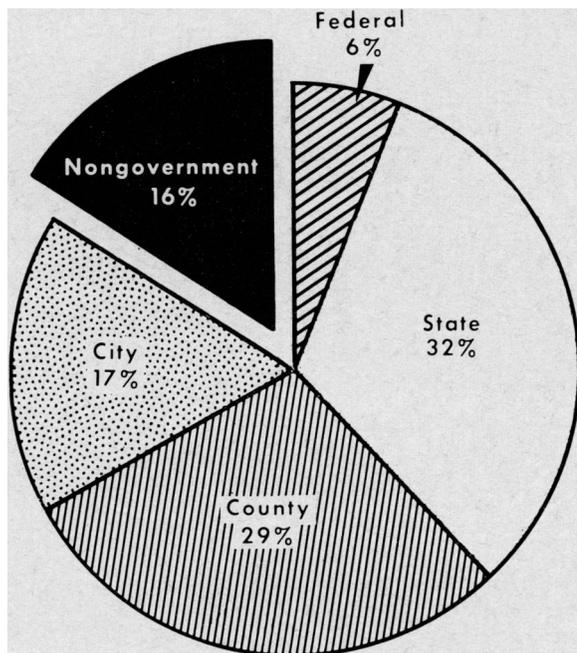
A larger proportion of nongraduates than of graduates are engaged in inspection, testing, or quality control—58 percent compared with 46 percent. The reverse is true for management or administration, with relatively more of the graduates having this type of work.

*Specialization.* Slightly more than one-third of the group report food and meat technology as their area of greatest competence. Another third report milk as their speciality. Less than 7 percent indicate any other single area among 15 listed.

In recent years sanitarians have been assigned various functions, duties, and responsibilities in such relatively new fields as air pollution, radiological health, and occupational health. These combined fields were chosen as representing their major speciality by only 3 percent of the respondents. The sanitarian occupation is acquiring greater perspective, and growing numbers of specialists in these specialities can be expected.

*Education.* Such hope and expectation lead naturally to the consideration of education. Almost two-thirds (63 percent) of the total group surveyed are college graduates. Many reported 2 or 3 years of college but had not completed the full course leading to the bachelor's degree. That two of three respondents had graduated from college may reflect a greater response among the better educated in the occu-

**Figure 1. Percentage of sanitarians according to type of employer, 1962 Public Health Service survey**



pation. The mailing lists primarily comprised members of the professional sanitarian associations, and persons so affiliated are usually assumed to be among the better educated in any calling.

Of the college graduates, two-thirds have bachelor of science degrees and one-third bachelor of arts. Relatively more of non-government than of government employees are college graduates (fig. 2).

A wide variety of background fields are represented among the respondents: 29 percent in agriculture, 25 percent in the biological sciences, 24 percent in public health or veterinary medicine, and 13 percent in the physical and earth sciences. Only 4 percent majored in the sanitary sciences, which constitute a relatively new grouping of health-related specialties offered primarily at the graduate level. Opportunities for advanced study in environmental health are becoming more frequent and should attract greater numbers of persons.

Fourteen percent of the respondents had master's degrees. Three-fourths of these degrees were either in science or in public health.

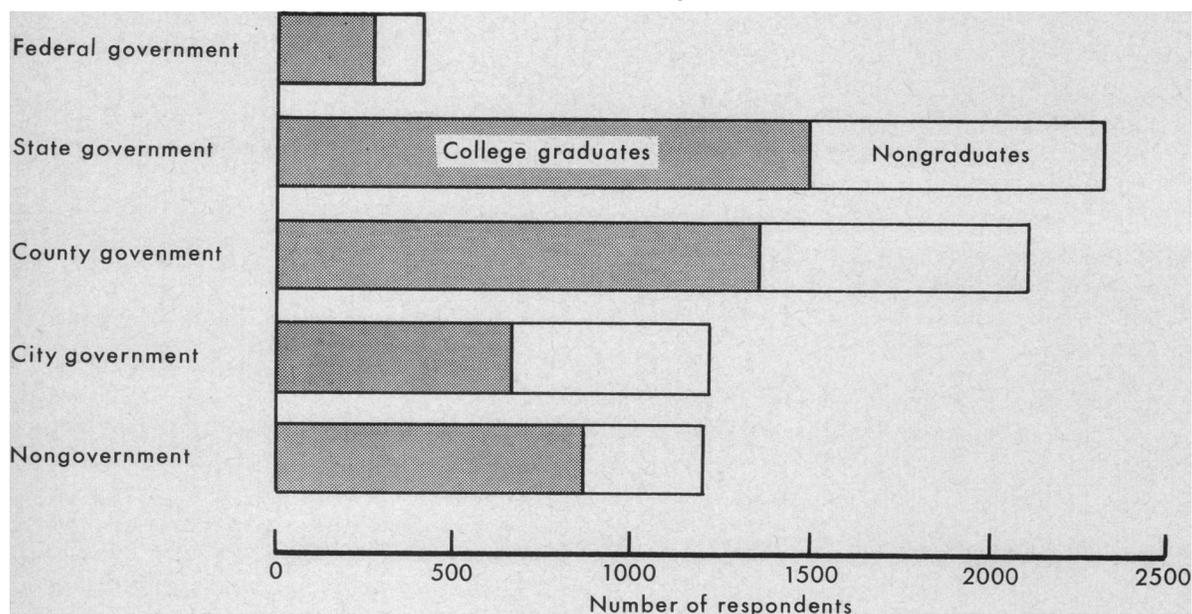
A doctor's degree had been earned by 3 percent of the total. This was more likely to be a Ph.D. degree than any of the other doctorates.

The varied background majors of the respondents suggest that there is as yet no clearly defined and sharply focused basic curriculum to produce sanitarians with initial competence on the job. The great variety of majors represents a measure of the many facets of a sanitarian's work leading to later specialization.

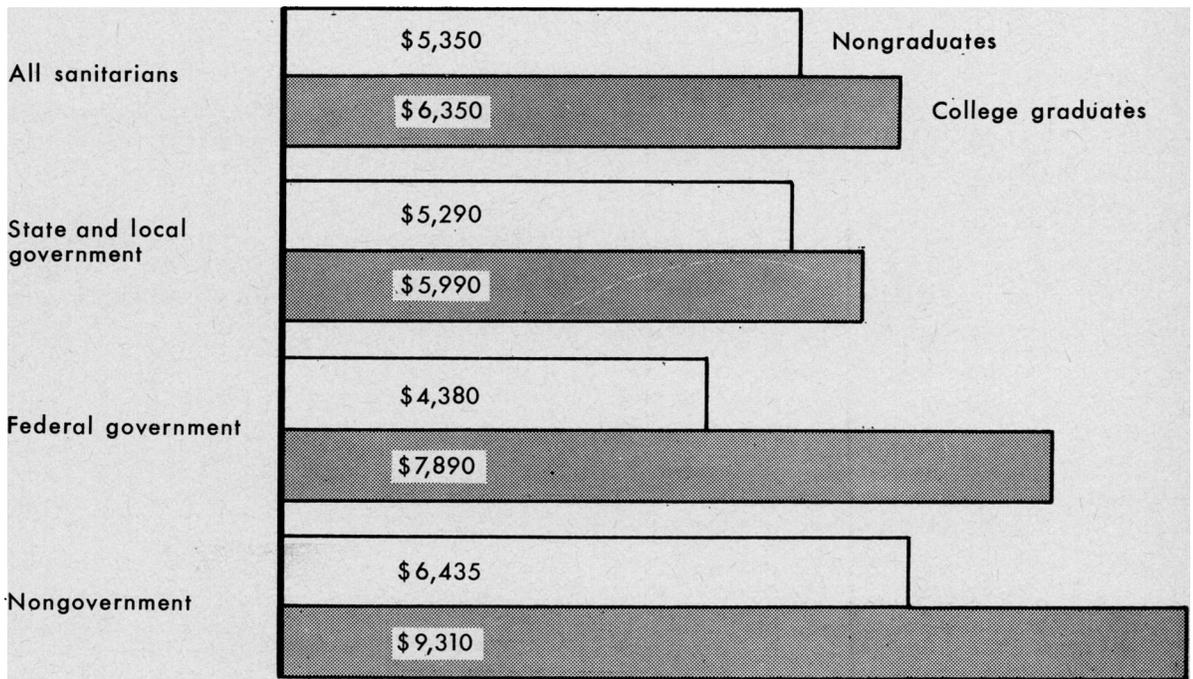
The survey shows that enrollment for specialized short-term courses is characteristic for practically all respondents. However, the sanitarians tend to concentrate within their own specialties. The greatest number of respondents are specialists in milk, food, or meat technology, and these persons enrolled for short courses in their fields. Because of the need for sanitarian generalists, this concentration should be examined. That sanitarians report taking so many specialized short courses could be an indication that (a) they have a keen interest in keeping abreast of new developments in rapidly expanding technologies, (b) they are being assigned to a greater variety of fields in many of which they have little or no substantive background, or (c) their original basic education and training may have been inadequate in some areas. The survey points out the need for continued emphasis on inservice training programs.

*Salaries.* The median annual salary is

**Figure 2. Number of sanitarians according to education and type of employer, 1962 Public Health Service survey**



**Figure 3. Median annual salary of sanitarians according to education and type of employer, 1962 Public Health Service survey**



\$5,960; that is, half the respondents receive less and half receive more. Who the sanitarian works for makes a difference. Median salaries are highest for those in teaching or in business (\$8,840) and lowest for those employed by State and local governments (\$5,660).

College graduates have a median salary \$1,000 higher than that of nongraduates (\$6,350 compared with \$5,350). But the advantage of a college education discloses much greater spreads by type of employer. The differential is about \$3,000 for Federal and nongovernment sanitarians but only about \$700 among State and local government employees (fig. 3).

That one-fourth of the respondents receive less than \$5,000 per year and half receive less than \$6,000 reflects the obviously depressed salary schedule among the major employers. State and local governments employ three of five sanitarians, yet they pay the lowest and show the smallest differential for a college education.

These data are representative of the many facts to be found in considerable detail in the Health Manpower Source Book, "Sanitarians," recently issued by the Public Health Service

(8). This publication also includes information on general characteristics, such as year of birth, sex, length of work experience, membership in professional associations, and State licensing. Three-fourths of the sanitarians reported that they belonged to one or more national professional associations.

#### Discussion

The survey raises many questions and identifies many difficult areas to which organized sanitarian leadership can address itself with profit. In the desire to be initially comprehensive, the survey could not investigate certain areas in depth. Future studies of specific aspects of sanitarian work would illuminate many relationships which remain obscure.

For example, age distribution was poorly reported in the survey, with the result that the expansion or contraction of manpower in the occupation cannot be determined. There are great differences in concentration of sanitarians throughout the nation. Is there an adequate supply to serve the needs in all areas? Is there a deficit of trained sanitarians, with increasing shortages predicted for the future?

The reported years of work experience suggest that a significant number of sanitarians do not enter the occupation directly from school. Why not? How can recruitment be made more effective?

There are no data at present on the number of college graduates with majors in the agricultural, biological, and health-related sciences who become sanitarians. Should there be a basic curriculum for all sanitarians regardless of their later specialization? Or should there be two distinct curriculums, one for the generalist and one for the specialist? The nature and extent of short-term, specialized courses should be examined further for clues that might disclose limitations in the basic education of sanitarians.

Further study should be made of the great spread in salaries among regions, with particular attention to differences in levels of competence and performance. Are the functions, duties, and responsibilities of sanitarians today too varied and diverse for effective on-the-job performance? Has the professional sanitarian outgrown certain functions which should be assigned to lesser-trained personnel?

The survey data will be interpreted differently by sanitarian societies, by employers of sanitarians, by those who educate and train sanitarians, and by the sanitarians themselves. All interpretations and analyses should lead to further study, and further study can lead only to improvements, individually and collectively, for those in the occupation.

To develop sufficient data for an effective study of manpower requires consideration of the supply of sanitarians, their use, and the need for their services. The measurement of supply entails the collection of data describing those currently in the profession and those in training to become sanitarians. From data such as mor-

tality rates and anticipated population growth, the manpower investigator can develop information on the current sanitarian-population ratio, the anticipated supply, and replacements required to cover deaths, retirements, and expansion. Supply data must be accompanied by information on the degree of use of those currently employed, the demand or need for personnel with such training, and the unmet need for sanitarian services. The present duties and responsibilities of the sanitarian have evolved to meet modern needs and can be expected to change with future growth of the profession.

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